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Second edition
2009-12-15

Automation systems and integration — Numerical control of machines — Program format and definitions of address words —

Part 1:

Data format for positioning, line motion and contouring control systems

*Systèmes d'automatisation industrielle et intégration — Commande
numérique des machines — Format de programme et définitions des
mots adresses —*

*Partie 1: Format des données pour les systèmes de positionnement, de
commande paraxiale de mouvement et de contourage*



Reference number
ISO 6983-1:2009(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 6983-1 was prepared by Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 1, *Physical device control*.

This second edition cancels and replaces the first edition (ISO 6983-1:1982), which has been technically revised.

The following changes have been made to the first edition:

- the content has been restructured in a more logical order;
- the commonly used preparatory (G) and miscellaneous (M) function codes have been grouped in one standard (see Annex E);
- address indexing has been introduced (see 6.2);
- the equal (=) sign has been added to allow for axis indexing (see 6.2.1);
- new data formats have been specified to existing programming methods: helical interpolation (see 7.3); dwell time (see Clause 13); thread cutting (see Clause 11).

ISO 6983 consists of the following parts, under the general title *Automation systems and integration — Numerical control of machines — Program format and definitions of address words*:

- *Part 1: Data format for positioning, line motion and contouring control systems*

The following parts are under preparation:

- *Part 2: Coding of miscellaneous functions M (class 1 to 8)* [Technical Report]

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Introduction

ISO 6983 describes a word address program format for machine control programs on different data storages, e.g. perforated tape, magnetic media, universal serial bus (USB) stick, hard disk, floppy disk, random-access memory (RAM), etc., or provided from a remote data source. ISO 6983 covers variable block format only and is not intended to specify machine design.

ISO 6983 is intended to specify the program format for the control program to be used for numerical controls (NC) on machines/machine tools. However, ISO 6983 can also be used for all kinds of geometric specifications and interactions with machines.

The program format specified by ISO 6983 is commonly referred to as "G code programming" or "ISO programming".

Compliance with ISO 6983 does not guarantee interchangeability of machine control programs between different machines/machine tools. Annex D details some of the additional considerations necessary to ensure this interchangeability.